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Argentina: Resisting International Nuclear Safeguards

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An Intelligence Assessment

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ALA 83-10046C

April 1983

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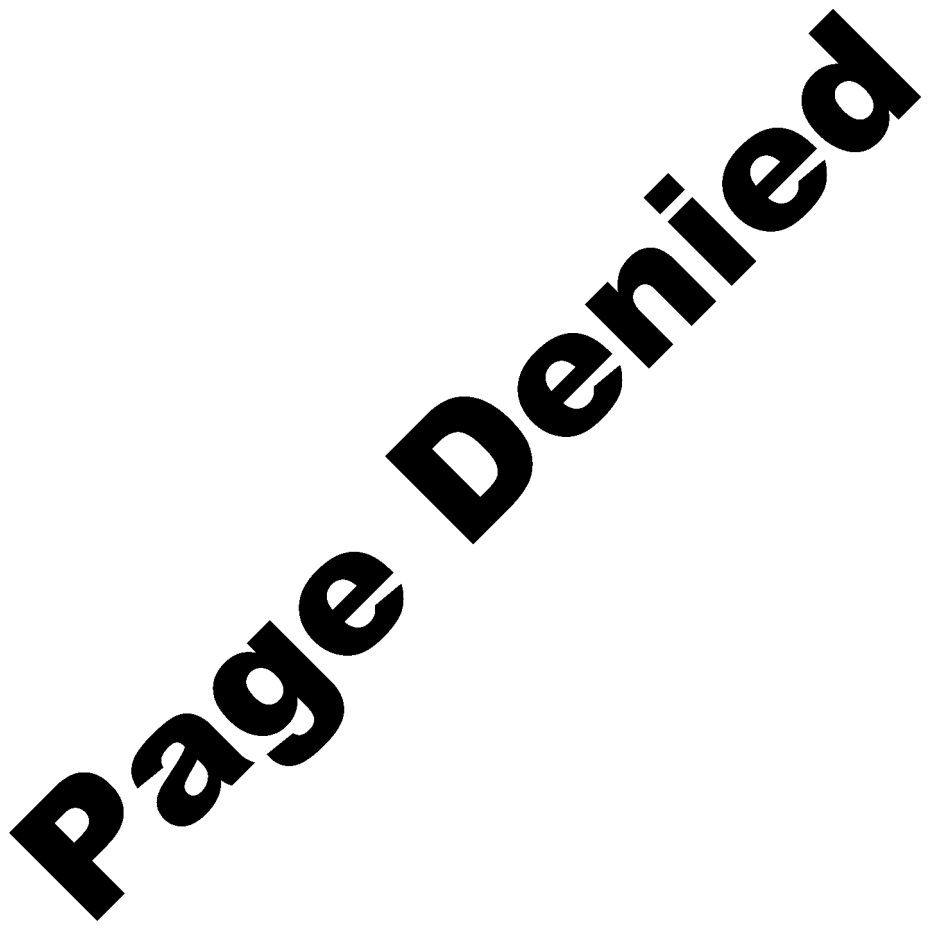

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Argentina: Resisting International Nuclear Safeguards

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An Intelligence Assessment

This assessment was prepared by
Office of African and Latin American Analysis.
Comments and queries are welcome and may be
directed to the Chief, South American Division, ALA,

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This assessment was coordinated with the
Directorate of Operations and the National
Intelligence Council.

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Key Judgments

Information available as of 25 March 1983 was used in this report.

Argentina has moved from a willingness to accept the international safeguards on some specific nuclear imports to a policy aimed at acquiring sensitive technology, materials, and equipment totally without restrictions. As its nuclear program has advanced, Argentina has increasingly resisted international efforts to regulate the spread of nuclear technology. The avoidance of safeguards, whenever possible, has become a key aspect of Argentina's nuclear development plan.

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We deem it unlikely that Argentina will take nuclear safeguards policies into greater account as its nuclear export capability grows. In fact, the influence of the international safeguards regime in Argentina will probably continue to decline. Buenos Aires now publicly justifies the construction of an unsafeguarded reprocessing facility, in part, on the basis of a plan to export plutonium. Within the next five to 10 years Argentina probably will also be able to export research reactors, fuel fabrication equipment, and reprocessing technology.

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The strength of Argentina's program and skill in acquiring the technology it wants with few or no restrictions makes it a useful model for and potentially more important partner of other nations.

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other nuclear-threshold states, notably Pakistan and Libya, are well aware of Argentina's growing ability to supply sensitive materials and technology and are interested in either becoming recipients or nuclear partners.

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Because of differences with Washington over nuclear policy, bilateral nuclear commerce with the United States has virtually ceased. Moreover, Buenos Aires is now confident that it can chart its own course as a nuclear exporter, and US efforts to influence Argentine nuclear practices are unlikely to succeed.

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Contents

	Page
Key Judgments	iii
Introduction	1
Early Quest for Self-Reliance	1
Minimal Adherence to Nonproliferation Regime	1
The Non-Proliferation Treaty	2
The Treaty of Tlatelolco	2
Manipulation of IAEA Safeguards	3
Other Evasions at Major Facilities	4
Unsafeguarded "Indigenous" Activities	5
Unsafeguarded Materials and Assistance	8
Constraints on Argentine Ambitions	9
A Potential Model and Nuclear Partner	10
Implications for the United States	10

Appendix

Origins of the Argentine Nuclear Program	13

Figure 1
Argentina's Nuclear Facilites

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Argentina: Resisting International Nuclear Safeguards

Introduction

Argentina has long sought to master the technology necessary to develop a nuclear weapons capability and to become an important supplier of nuclear equipment and assistance. In pursuit of these objectives, Argentine leaders have taken advantage of the loopholes in the international nonproliferation safeguards regime. They have also refused to accept the full-scope safeguards[1] required by US policy. As a consequence of its success in avoiding comprehensive safeguards over its nuclear program, Argentina now poses a challenge to global nonproliferation efforts (figure 1).

This paper documents Argentina's success in obtaining, with minimal restrictions, the nuclear technology it wants. It examines how Argentina has used this technology to enhance its nuclear capabilities and to position itself as an exporter. It also assesses the impact Argentina could have as a potential proliferator and model for other nations aspiring to nuclear status. Finally, this paper examines the declining ability of the United States to influence Argentina's nuclear policies.

Early Quest for Self-Reliance

Beginning with Argentina's initial interest in atomic energy in 1949, national leaders committed themselves to developing a centrally controlled nuclear research program with minimal dependence on foreign assistance. Since its establishment in 1950, the Atomic Energy Commission (CNEA) has been under senior military control, and major aspects of its research have been highly classified. Although in the early years Argentina was almost wholly dependent on foreign expertise and technology, the commission sought to stimulate nuclear research in Argentine institutes and universities and to encourage the local manufacture of scientific instruments. In addition, the Argentine Government decided at this early stage in the program's development to plan for the use of the country's own plentiful deposits of natural uranium in nuclear power reactors.[2]

This clear policy and the investment of substantial resources has resulted in the acquisition of two safeguarded power plants and the construction of separate unsafeguarded nuclear facilities that could be used to support a nuclear weapons program. The most important of these facilities is a fuel reprocessing plant, which, when completed in 1985, will produce six kilograms of plutonium annually.

Minimal Adherence to Nonproliferation Regime

Having established their goal of ultimate nuclear self-reliance, Argentine leaders have consistently resisted all foreign efforts to impose restrictions on what they regard as indigenous Argentine nuclear facilities and technology. When the international safeguards system began to evolve in the mid-1960s, Buenos Aires sought—within the system—to minimize the compromise of its autonomy.[3]

Argentina has steadfastly refused to participate fully in the nonproliferation regime. Buenos Aires refuses to sign the Nuclear Non-Proliferation Treaty (NPT) or to adhere to the regional Treaty of Tlatelolco—the two principal international instruments that would

[1] *Nuclear safeguards,* which are administered by the International Atomic Energy Agency, normally cover only transfers of nuclear technology, equipment, and materials. *Full-scope safeguards,* which are now prescribed by US and Canadian policy governing their nuclear exports, require that *all* nuclear facilities and materials of recipient nations—regardless of origin—be subject to international inspection. For example, a reprocessing plant built in Argentina would be subject to full scope, but not international, safeguards.

[2] See the appendix for a history of the Argentine program.

[3] The Safeguards Advisory Committee of Argentina's Atomic Energy Commission plays a key policy role within the highly centralized structure of the CNEA. this group advises CNEA chief Castro Madero on all matters pertaining to nuclear safeguards and that its recommendations are usually adopted. Moreover, its chairman serves as acting director of the CNEA in Castro Madero's absence.

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prohibit it from developing nuclear weapons. Its nuclear spokesmen have repeatedly charged that these treaties discriminate against nonnuclear states and are ineffective.

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The Non-Proliferation Treaty. Since the NPT entered into force in 1970, Argentina has defended its refusal to become a signatory on the grounds that:

- The treaty benefits nations that are already nuclear weapons states and discriminates against those that are not.
- Major suppliers have not fully complied with treaty provisions that guarantee the right of nonnuclear weapons states to acquire or develop nuclear technology for peaceful purposes (Article IV).
- Treaty signatories that possess nuclear weapons (the United States, United Kingdom, and the Soviet Union) have failed to pursue negotiations in good faith toward nuclear arms control and nuclear disarmament (Article VI).
- The implementation of the treaty has fostered highly discriminatory nuclear supply policies involving the denial of nuclear technology to some, but not all, nonsignatories.

Wideworld ©

Vice Adm. (Ret.) Carlos Castro Madero is a tough, single-minded proponent of rapid development of Argentina's nuclear capabilities. As president of the National Atomic Energy Commission (CNEA), he is the key policymaker and spokesman in the nuclear field, as well as his country's representative to the International Atomic Energy Agency (IAEA).

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Until recently Argentina did not actively take issue with or seek to undermine the NPT. However, US nonproliferation policies in the late 1970s, which denied Argentina enriched uranium, apparently persuaded Argentina to side actively with other nonaligned nations against the NPT.[4] In early July 1980, one month before the second NPT Review Conference opened in Geneva, Buenos Aires hosted a meeting of the Nonaligned Movement's Coordinating Committee for Nuclear Energy. the Buenos Aires meeting, which included several NPT nonsignatories, resulted in a strategy to focus international attention on the absence of substantive progress by the nuclear weapons states toward nuclear disarmament as called for by the NPT (Article VI). At the subsequent Geneva session, the US delegation cited the firm stand of the nonaligned states against the nuclear weapons states on nuclear disarmament and other issues as the primary reason for the conference's failure to publish even the customary final document reaffirming the value of the treaty.

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The Treaty of Tlatelolco. Even though various Argentine leaders have periodically told senior US officials that they intend to ratify the Treaty of Tlatelolco, which established a nuclear-weapons-free zone in Latin America, we believe it unlikely. In a press interview in December 1981, then and current CNEA chief Castro Madero admitted that major difficulties preclude ratification because the Argentines find others' interpretations of its clauses unacceptable. The

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[4] Argentina insisted that it was in full compliance with export criteria stipulated by the US Nuclear Nonproliferation Act of 1978 and condemned Washington's refusal to provide export licensing as a flagrant violation of a 1969 bilateral nuclear cooperation accord and as further evidence of US unreliability as a supplier of nuclear fuel and technology. Washington justified its action on the grounds that Buenos Aires refused to adopt full-scope safeguards.

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disputed issue is Argentina's claim that the treaty permits its signatories to conduct "peaceful nuclear explosive" tests if they choose to do so—an interpretation which some parties, including the United States, reject.

Manipulation of IAEA Safeguards. Argentina has joined the International Atomic Energy Agency (IAEA) because all major nuclear supplier states insist on IAEA safeguards for the nuclear material, equipment, and technology they export. Buenos Aires, however, has strenuously resisted the application of these safeguards outside narrow confines. Argentina's relations with the IAEA, moreover, have become increasingly contentious on a number of issues, including nuclear safeguard requirements. Argentine officials have disagreed repeatedly with IAEA officials over the application of international safeguards of any kind to foreign nuclear equipment and materials transferred to Argentina.

Argentine officials are unwilling to sign any agreements which they fear would be construed by some parties to the global nonproliferation regime to have broader applicability. Two such cases have been the Atucha II power reactor, being built by West Germany, and the Arroyito heavy water production plant, currently under construction by the Swiss:

- With regard to Atucha II, Argentine officials rejected an IAEA safeguards proposal defining heavy water purification equipment at the reactor as a heavy water production system. The Argentines maintained that accepting such a definition would obligate them to safeguard every heavy water production facility in Argentina, because all heavy water production systems are comparable.

- Argentina objected on similar grounds to an IAEA draft pertaining to the Arroyito plant. Once again, Argentine officials complained that the technical safeguards language was too broad and could be extended to include Argentine-produced facilities.

In each case, although both sides compromised, the IAEA agreed to safeguard provisions that apply explicitly only to the two plants themselves. This gives Argentina the license to replicate aspects of the technology involved on an unsafeguarded basis.

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Atucha I nuclear power plant in operational status.

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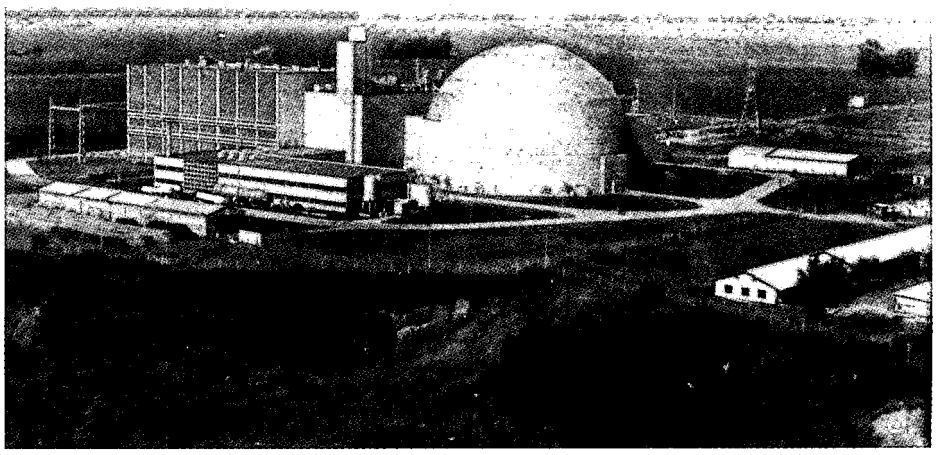

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The 630-megawatt Embalse power reactor, supplied by Canada, also poses problems relative to safeguards. Available evidence strongly suggests that Argentina has engaged in posturing and foot-dragging to avoid full implementation of restrictions.

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Other Evasions at Major Facilities. There have been serious problems with the implementation of a credible safeguards program at Argentina's two completed power reactors, Atucha I and Embalse.

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Atucha I has not been under effective safeguards since Argentina began fabricating Atucha fuel in 1976.

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Embalse nuclear power plant in final stages of construction

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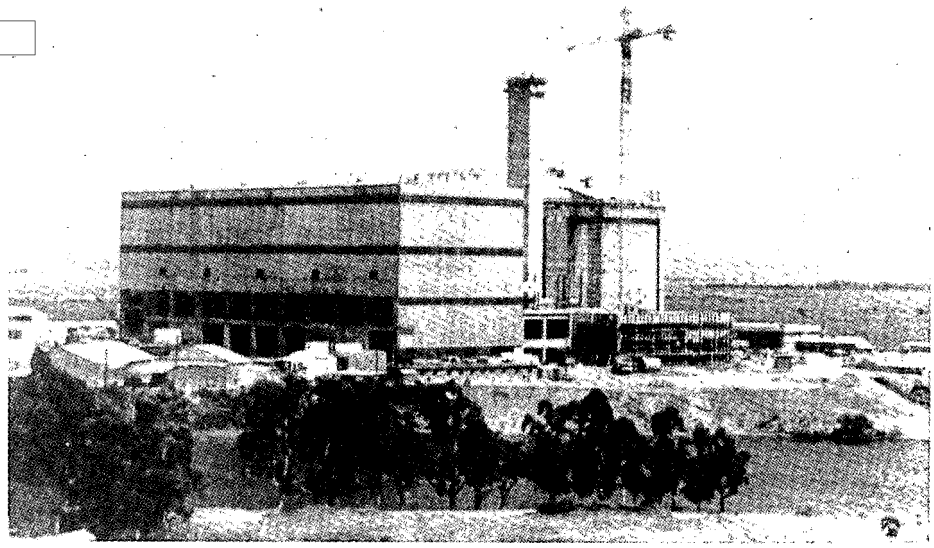

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Unsafeguarded "Indigenous" Activities

In addition to their efforts to limit the effectiveness of IAEA safeguards on imported nuclear materials, equipment, and technology, the Argentines are also building or have plans to build several nuclear facilities, outside of safeguards—in the hope of obtaining a completed nuclear fuel cycle not subject to IAEA controls (figure 2). They publicly justify their actions by claiming that several nuclear facilities in Argentina are entirely or largely indigenous. When imported nuclear components have been required, the Argentines have been adroit at acquiring them on an unsafeguarded basis by taking advantage of loopholes within the safeguards regime. Although these facilities are considered pilot scale, they could support the development of nuclear weapons.

Capitalizing on their extensive uranium reserves, the Argentines have built several extraction and refining facilities, all of which are unsafeguarded (see table). By the end of 1983 these plants are estimated by Argentina to produce 800 tons of uranium concentrate per year.

Argentina also manufactures most of its own reactor fuel fabrication equipment on an unsafeguarded basis. The CNEA is building zircalloy fuel rod manufacturing facilities, which it claims are largely or entirely of indigenous construction and, therefore, will not be placed under safeguards.

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To acquire the technology necessary to manufacture its own fuel rods, Argentina has taken advantage of the ambiguous wording in nuclear export regulations. These regulations require safeguards on fuel rod components and zirconium metal and its alloys, but only in their final tube configuration. Argentina,

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has developed its own capability to make fuel assemblies without safeguards and without committing technical proliferation violations,

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Although Argentina recently postponed the construction of its own unsafeguarded pilot-scale heavy water production plant,

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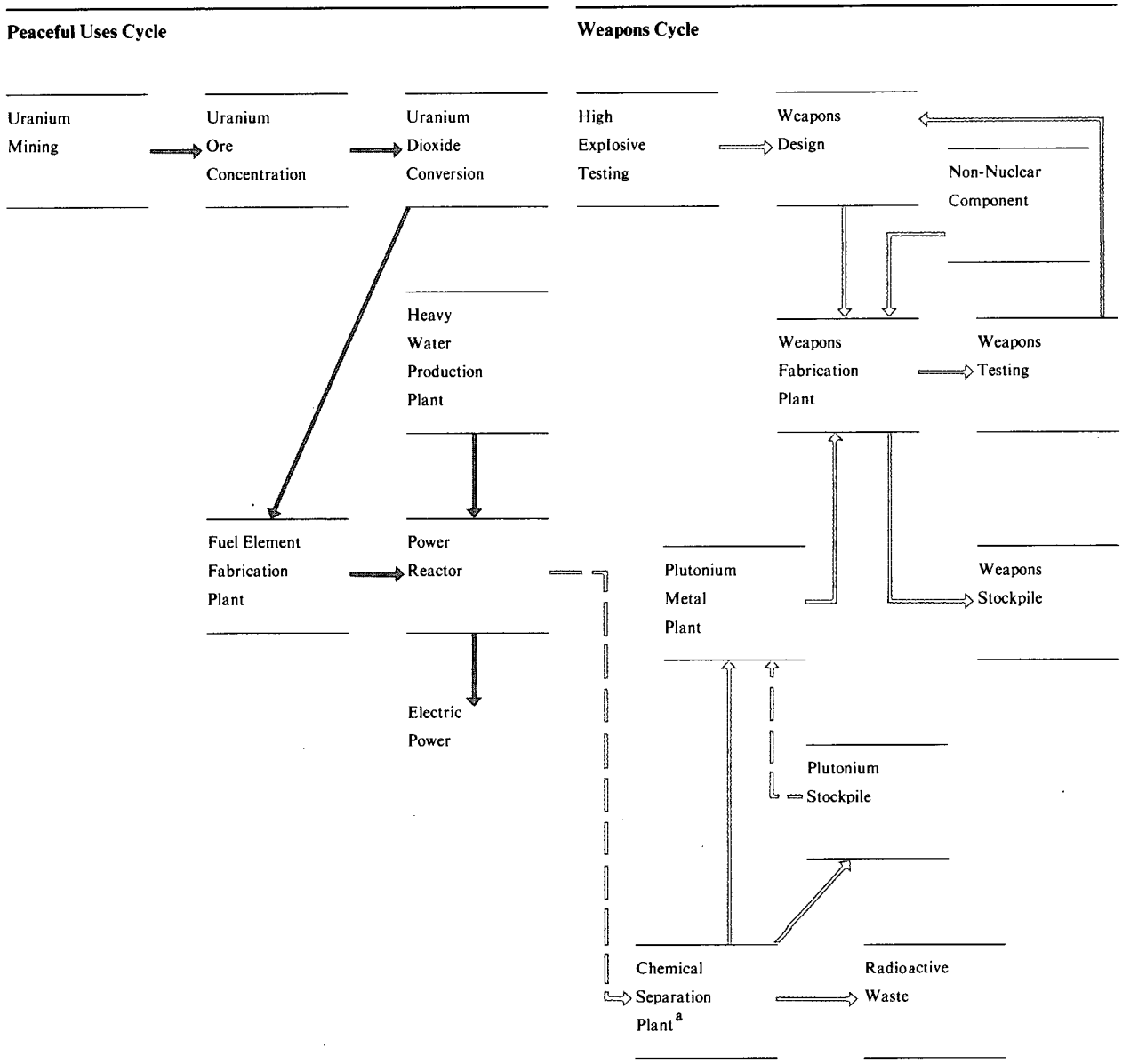
Figure 2
Nuclear Fuel Cycle
(Potentially Applicable to Argentina)



[a] Commonly known as Reprocessing Plant

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Argentine Nuclear Fuel Cycle Facilities

Facility	Capacity *(per year)*	Actual or Estimated Completion Date	Safeguards
Uranium concentration (expansion; 4 facilities)	700 metric tons	1984	No
Uranium dioxide	50 metric tons	1979	No
Uranium dioxide	150 metric tons	1982	Yes
Pilot fuel fabrication (Atucha I fuel)	45 metric tons	1978	No
Fuel fabrication (Atucha I fuel)	70 metric tons	1982	Yes
Fuel fabrication (CANDU fuel)	100 metric tons	1982-83	No
Fuel fabrication (Atucha II fuel)	100 metric tons	1987	Yes
Zirconium sponge	1 metric ton	1978	No
Zircalloy tube	40,000 meters	1982	No
Heavy water production	250 metric tons	1984	Yes
Pilot heavy water production	2 metric tons	1983	No
Pilot heavy water production	80 metric tons	1986	No
Fuel reprocessing	6 metric tons (20 kilograms of plutonium)	1985	No
Fuel reprocessing	35 metric tons	1986	No

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We believe the decision to halt construction was due in part to budgetary constraints,

and its projected capacity was upgraded from 40 to 200 megawatts.

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Assuming Argentina intends to complete its unsafeguarded nuclear fuel cycle, the only remaining facility not already under construction is a research reactor that would produce plutonium. Since 1976 there have been frequent reports of Argentine plans to build a powerful, natural uranium, heavy water research reactor for the specific purpose of producing plutonium. The most recent plans designated this reactor RA-7,

The Ezeiza Atomic Center fuel reprocessing plant, begun in 1979 and scheduled to become operational in 1985, is unsafeguarded Argentine nuclear officials have privately told US officials that the plant will be designated a national facility, not subject to IAEA safeguards, because it has been built entirely by Argentine technicians and is based on a technology developed by the CNEA in the early 1960s. It will be

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[5] Meanwhile, construction continues on the commercial heavy water production plant, purchased in 1980 from the Swiss. This plant, which is intended to produce the heavy water for Argentina's power reactors, will be placed under IAEA safeguards when it becomes operational in 1983-84.

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used, however, to reprocess spent fuel from the safeguarded power reactors. The plant, which could be expanded to commercial scale, will initially reprocess 6 tons of spent power reactor fuel per year, thereby separating approximately 20 kilograms of plutonium annually—enough for two or three nuclear devices.

Unsafeguarded Materials and Assistance

The Argentines not only are constructing unsafeguarded facilities but also have used a variety of techniques to acquire on an unrestricted basis nuclear materials that are normally under IAEA safeguards. The Argentines adamantly refuse either to safeguard or to inform the IAEA of nuclear materials that have been purchased through intermediaries or from nations not insisting on safeguards.

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Constraints on Argentine Ambitions

The constraints on Argentina's nuclear ambitions are relatively few, and they are not likely to be overriding. The most serious is economic. Current financial difficulties—especially the hard currency shortage—are imposing severe limitations that could delay completion of some nuclear facilities for years.

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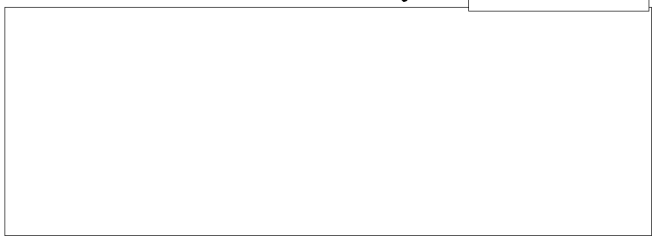

Consistent with its firm legal position that it is under no international obligation to accept safeguards on nuclear supplies in cases where the supplier state refused or failed to insist on such controls, Buenos Aires is unwilling to place 7 tons of US-origin heavy water under safeguards. The Argentines justify their position because the transfer occurred before any nuclear export controls were placed on heavy water.

The influence of the international safeguards regime on the Argentine program is steadily declining. As Argentine companies increasingly participate in the construction of imported nuclear facilities, the potential grows for technological replication outside of safeguards. The Atucha II contract, for example, contains clauses providing for increased technical cooperation between West Germany and Argentina, including the formation of a joint nuclear engineering and development company, "Empresa Nuclear Argentina de Centrales Electricas." This cooperation could eventually enable the CNEA to acquire a license to manufacture and export the West German–type heavy water reactor.

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an Italian nuclear firm has also provided unsafeguarded assistance to Argentina, presumably without the full knowledge of the Italian Government. According to the US Embassy in Rome and a source of undetermined reliability, the Italian firm Snia-Techint has shared technical expertise with the Argentines at the Ezeiza reprocessing plant and was scheduled to provide them with a fuel element chopping machine to be installed at the same facility.

We judge it unlikely that significant antinuclear sentiment will emerge in Argentina, and even more improbable that such opposition would be effective. Despite its high cost, Argentina's nuclear program has never been a subject of domestic political debate nor public controversy.

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in sharp contrast to Brazil, for example, Argentina's scientific community is highly unified in its backing of nuclear policy. Only one prominent nuclear scientist publicly criticized the CNEA chief for suggesting, following the Falklands defeat, that Argentina might build nuclear submarines. His comment was restricted to the warning that it is unwise—given Argentina's current problems—to talk openly about building nuclear weapons.

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With the military government scheduled to relinquish control to civilians in early 1984 and the conditions of the transfer unsettled and contentious, Argentina's political prospects are uncertain. Regardless of the character of future Argentine governments, however, we believe the drive for nuclear self-reliance is likely to remain steady or even be accelerated.

According to a US Embassy assessment, any new government will probably be highly nationalistic. Such a government might be more likely than a moderate one to exploit the country's nuclear achievements to date and speed the development of an explosives capability. Even a moderate administration might be unable to restrain ambitious and energetic nuclear technocrats. In any event, because past governments, no matter how weak, have demonstrated their commitment to an indigenous nuclear program since its inception, it is unlikely that future national leaders will reverse the trend. In a worst case scenario, as Argentina begins to stockpile plutonium in 1985-86, technological momentum could persuade Argentine leaders to authorize the design and construction of nuclear weapons.

A Potential Model and Nuclear Partner

Argentina's efforts to develop an unsafeguarded nuclear fuel cycle capability and its lack of respect for international safeguards threaten nonproliferation efforts globally in two fundamental ways. First, its success in finding loopholes in current nuclear export criteria highlights the disagreements among major nuclear suppliers and can serve as a model for other ambitious nuclear threshold states. Second, its lack of support for international safeguards administered by the IAEA weakens international confidence in that organization and inhibits efforts to reform or strengthen inspection and monitoring procedures.

We predict that Argentina's increasingly important nuclear export policies will undermine global nonproliferation efforts. CNEA chief Castro Madero has said publicly that Argentina is building reprocessing technology for the purpose of exporting plutonium. Although he has promised, when pressed, that this will be done under safeguards, he has provided no specifics. We believe that this apparent lack of concern for safeguards reflects the likelihood that Argentina will eventually export research reactors and reprocessing technology with few restrictions.

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Implications for the United States

Buenos Aires shows no signs of active interest in the restoration of commercial nuclear ties with Washington. It has found several alternative suppliers, some of whom require less stringent safeguards. These include West Germany, Switzerland, Italy, the Soviet Union, China, and Japan. Even though, according to US Embassy reports, Argentina's top nuclear officials have frequently told US representatives that they would like to buy US nuclear products, they always make repeal of current US nonproliferation laws a condition of purchase.

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We believe efforts by the United States to influence Argentina's nuclear policies would not be likely to achieve much if any success. Buenos Aires has been highly resistant to all external attempts to influence its nuclear program. Moreover, its ambitions have

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been heightened by the completion of nuclear fuel cycle facilities and the discovery of new commercial partners. The potential for Argentine-US bilateral cooperation generally has been reduced as a result of the Falklands war. Moreover, Buenos Aires now appears confident that it can chart its own course as a nuclear exporter to other Latin American and Third World nations.

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From the US perspective, Argentina's increasingly hostile actions within the IAEA only serve to politicize that organization. The Argentines are likely to continue to oppose any efforts to strengthen the IAEA. Moreover, their success in resisting international safeguards, especially as it becomes more widely known, has the potential to undermine confidence generally in the nonproliferation regime.

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President Juan Peron pins Peronista medal on Ronald Richter, Austrian-born scientist credited with developing new atomic energy process. Mrs. Eva Peron (center) watches ceremony.

The New York Times ©

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Appendix

Origins of the Argentine Nuclear Program

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Early Interest Based on Hoax

Argentine interest in developing a nuclear program was sparked in 1949, when a Nazi refugee physicist, Ronald Richter, persuaded then President Juan Peron to build a secret atomic research laboratory at San Carlos de Bariloche. With government coffers still flush with wartime profits, Peron also earmarked several million dollars for nuclear research and organized the National Atomic Energy Commission (CNEA) to administer it.

In March 1951, Peron told the press that in laboratory tests Argentina had discovered a new, inexpensive way to produce atomic energy using a controlled thermonuclear reaction without uranium. This claim immediately provoked skepticism and derision within the international scientific community.[7] For example, US Atomic Energy Commission Chairman, David Lilienthal, commented, "the Argentines may not know anything about the fusion of the lighter elements, but they do know about the methods of American publicity."

The US Intelligence Community's reaction was more cautious but led to the same conclusion: a CIA assessment, approved by the Joint Atomic Energy Intelligence Committee, reasoned that laboratory attempts to produce a deuterium or deuterium/lithium reaction were possible, but, even if successful, they would have no foreseeable application to atomic weapons or power production. The study also concluded that "the possibility of a hoax could not be discarded," and "in any event, the announcement was obviously timed to have the maximum political effect at the opening of the Conference of Western Hemisphere Foreign Ministers." The accuracy of this assessment was quickly borne out. Ensuing widespread reports that Richter's associates viewed him as a charlatan led, 18 months later, to his dismissal.

[7] *The New York Times* reported that one US scientist had branded Peron's claim the "super duper bull of the Pampas."

Argentine Motives

Both classified and unclassified reports at the time of Argentina's laboratory tests failed, however, to analyze the rationale for Peron's sponsorship of nuclear research or evaluate the scope of the program, already set in motion. According to several US intelligence reports from that period, Peron was worried about the growing disaffection of Army leaders, who were displeased with the populist tendencies of his government. To assuage their dissatisfaction, he reportedly promoted nuclear research to convince them that Argentine scientists could develop a nuclear weapon capability. Whether or not this was Peron's primary consideration, we believe that he exploited the atomic issue—as he did every issue—for political reasons.

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Lines of Authority Drawn

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By 1952, the CNEA was virtually a cabinet-level organization, consisting of several research institutes as well as a military plant for the fabrication of various scientific instruments (figure 4). From the outset, the Commission was under direct military supervision; its first director was an Army colonel, the second a Navy captain. Given the sensitive nature of the research and the high visibility Peron had assigned to it, we assume that these directors and the scientists working under them had direct access to the military high command as well as the President (figure 4).

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Periodic press releases reveal that the early 1950s constituted a period of sustained effort by the Argentines to develop a nuclear research program. These included reports of prominent European physicists discussing radioisotopic production in Buenos Aires,

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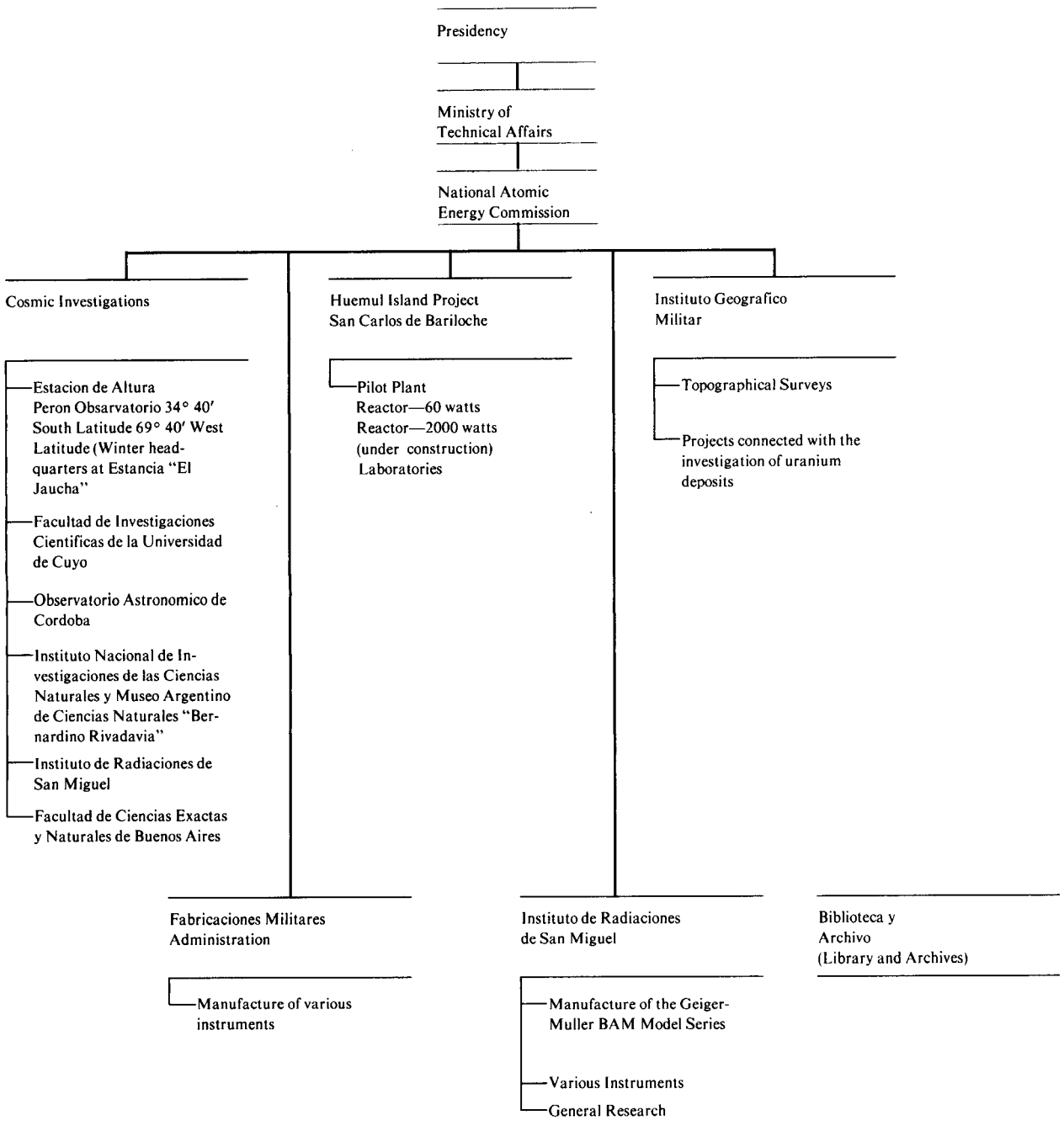
Figure 4
Organization Chart of Argentina National Atomic Energy Commission (CNEA), June 1952



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Argentine scientists studying nuclear fusion in the United States, the purchase of a cyclotron from the Netherlands for $780,000, and the startup in June 1953 of an atomic generator capable of producing 1.4 million volts. We believe that the attention to nuclear issues, even after Richter's laboratory experiments were exposed as a hoax, was clear evidence of Argentina's determination to make its ambitious nuclear program succeed. The press releases, however, failed to elicit editorial comment in Argentina or elsewhere. This failure to put Argentina's growing nuclear capability in any analytical perspective suggests that international observers continued to view Argentina's nuclear development as a scientific backwater rather than as a serious effort likely to achieve important objectives.

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Indigenous Course Set

By 1955, a decision appears to have been made to achieve eventual nuclear self-sufficiency. Then CNEA chief Pedro Iraolagoitia, in presenting a technical paper, "The Role of Atomic Energy in the Argentine Republic," at a UN conference stated that Argentina could not afford to base its nuclear development on enriched fuel. Instead, natural uranium would be utilized in thermal reactors. Iraolagoitia also said that dense graphite would be used as a moderator in the initial reactors because it could be readily obtained, but he predicted that beryllium and heavy water would play an important role in the future because it could be produced indigenously in substantial quantities.

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Iraolagoitia's paper made it clear that Argentina's nuclear program had survived the hoax which had given it birth, achieved a sound scientific footing, and had national status. He also implied that Argentina's policymakers intended to base it on indigenous natural resources as much as possible. In summary, Iraolagoitia had confidently and accurately sketched the planned evolution of the Argentine program.

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